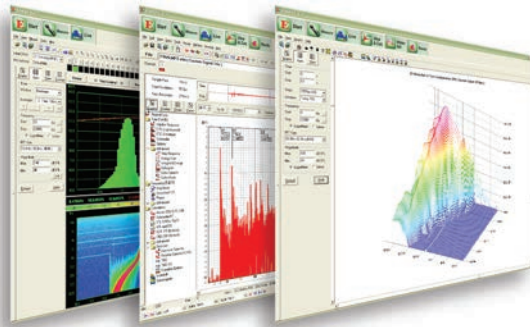


# EASERA

ELECTRONIC & ACOUSTIC SYSTEM EVALUATION & RESPONSE ANALYSIS

## ADVANCED ACOUSTICAL MEASUREMENT & ANALYSIS TOOLS

For Integrators, Engineers and Acoustical Consultants



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EASERA, EASERA Pro © copyright SDA - Software Design Ahnert, Berlin, Germany  
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# EASERA / EASERA PRO

## SETTING NEW STANDARDS IN ACOUSTICAL MEASUREMENT AND ANALYSIS

# EASERA

### ELECTRONIC & ACOUSTIC SYSTEM EVALUATION & RESPONSE ANALYSIS

The comprehensive EASERA test & measurement system is designed by acousticians for working professionals. No more lugging around heavy boxes of equipment – EASERA puts dual-channel FFT (Fast Fourier Transform), RTA (Real Time Analyzer), MLS (Maximum Length Sequence) and TDS (Time Delay Spectrometry) measurement tools inside your laptop.

EASERA delivers accurate results with most PC sound cards, so there's no need for an expensive external AD/DA converter and preamplifier. Most audio devices that provide WAVE/MME, Direct Sound or ASIO drivers are supported. EASERA can make 2-channel measurements, even without 2-channel hardware by storing the reference in memory. A wide range of stereo and bin-aural microphones can be used.

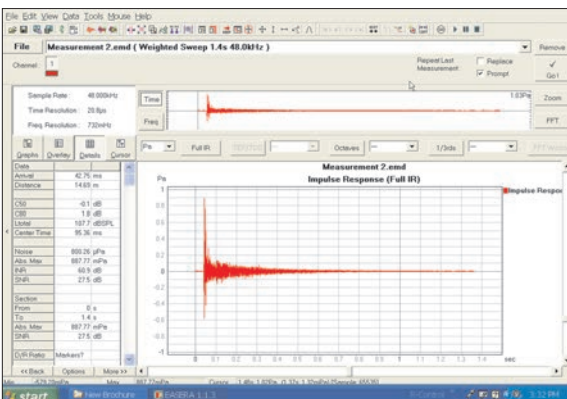
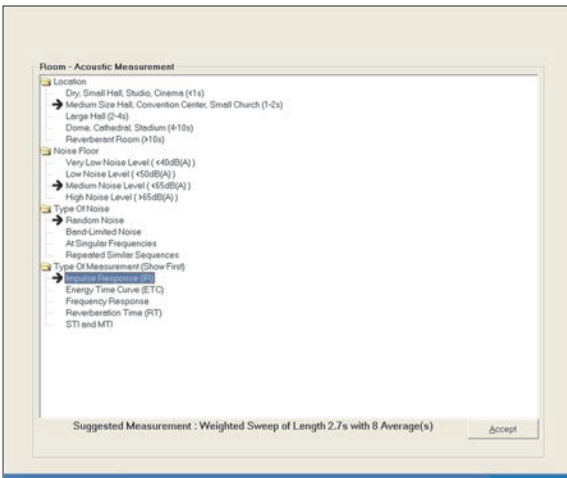
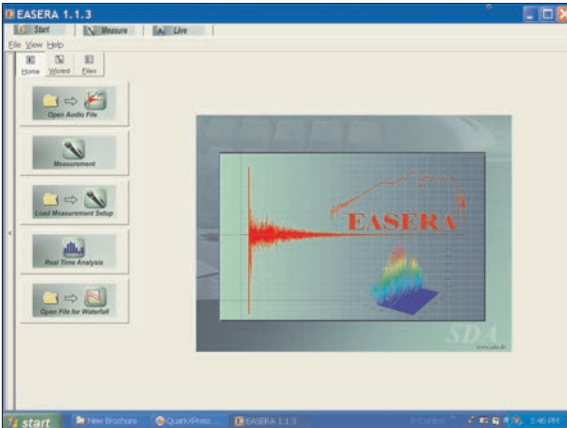
Accurate enough for any anechoic chamber, EASERA is built for the real world. Use any test signal you like: music or speech, tones, sweep or MLS signals, even external stimuli such as gun shots or balloon bursts. The 48 kHz sampling rate, built in noise compensation and averaging functions deliver accurate results even in noisy conditions.

Time is of the essence on any project, so EASERA is designed for maximum efficiency. The Measurement Wizard automates setup procedures for maximum accuracy and total repeatability. Post processing is automated as well. Need STI or ALCons intelligibly figures? EASERA delivers them in seconds at the touch of a button, along with all room acoustic parameters defined in ISO 3382. EASERA's unique Echo Speech and Echo Music displays make it easy to determine if reflected sound will be perceived as distinct echoes with either type of program material.

Despite its power and versatility, EASERA is simple to learn and to use. The intuitive GUI (Graphical User Interface) runs in the familiar Windows environment. The modular software design separates data acquiring from analysis, making it easy to add new capabilities and to look at the same data from different perspectives. Stored measurements may be post processed and analyzed at any time, giving you unprecedented insight into the behavior of any listening environment.

"It does all the measurements I need, saves them so I can look at them in many other ways later on, and fits under my airline seat."

**Jim Brown, Principal  
Audio Systems Group, Inc.**





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# THE TOTAL TOOL SET

## Industry Standards for Acoustical Design & Analysis

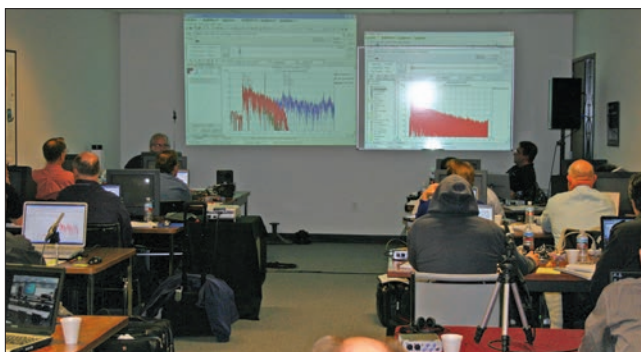
EASE & EASE JR have become industry standards for modeling, simulation, analysis and presentation of world-class venue and sound system designs. Rigorously scientific calculation engines, open loudspeaker and materials databases, and continuing software enhancements make the EASE software suite the choice of leading professionals worldwide. Integrators, engineers and acoustical consultants rely on the proven ability of these powerful software tools to predict real-world performance of sound systems, acoustical treatments and architectural solutions.

## Integrated Measurements for Design, Optimization & Performance Verification

EASERA data can be stored for post-processing and is easily imported into EASE models for design refinements and performance verification. Renovation and remediation projects can utilize actual measured data from EASERA, giving design proposals unquestionable credibility. Post-commissioning comparisons of predicted and measured data can be made with maximum efficiency and accuracy.

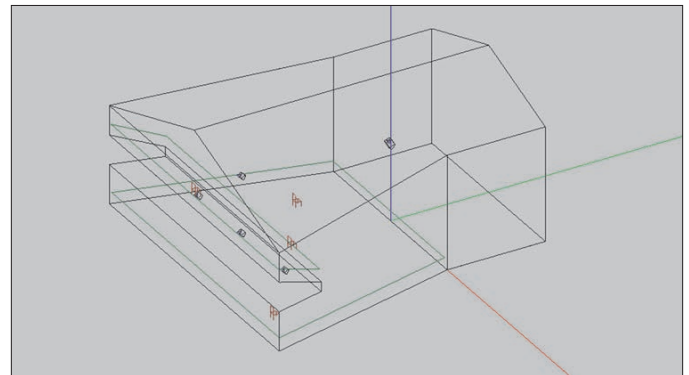


EASE (above) and EASERA (below) classes held at Renkus-Heinz in Foothill Ranch, California.

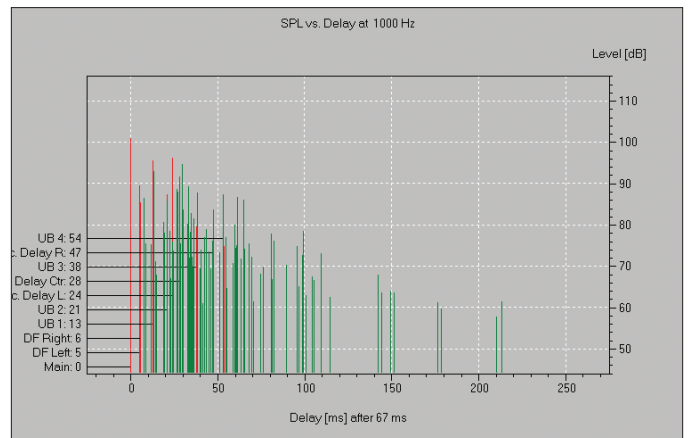


## Entry-Level Options

Access to all the benefits of an EASERA software license – unlimited lifespan, continual updates, ongoing educational and technical support – is surprisingly affordable. The base version of EASERA is just \$900. A 2-key EASE JR license and EASERA can be purchased together for just \$1,620. Any EASERA or EASE license can be upgraded as the professional needs and skills of the licensee require.



Typical EASE Wireframe drawing



An EASE Reflectogram showing reflection amplitude and arrival times

## An Ongoing Commitment To Value

### Lifetime Licensing: No Expiration Dates or Renewal Fees

EASERA licenses are not time-limited, do not expire and never require a renewal or update fee.

### Free Updates & Program Enhancements

Your EASERA or EASERA PRO license covers the complete software package, including an extensive Tutorial designed for self-paced learning. Updates are available at the click of a button.

### Easy Upgrade Paths

At any time, licensees are free to upgrade the basic package from EASERA to EASERA PRO, purchase additional license keys or add expansion modules, with credit for previous ownership.

### Outstanding Support & Training

Renkus-Heinz, the worldwide distributor for both EASERA and EASE software, has an expert technical support team that is only a phone call away. EASERA training classes are held on a regular basis in Renkus-Heinz's Foothill Ranch facility. SDA maintains active online user forums for EASERA software.



# INTEGRATED DATA ACQUISITION FOR DESIGN, COMMISSIONING, VERIFICATION AND OPTIMIZATION

## Comprehensive Yet Compact Measurement Toolset

EASERA includes a real time analyzer, a versatile signal generator and a range of manual and automated measurement functions plus extensive post-processing features. No longer do you need to lug around boxes of equipment in order to acquire essential acoustical information. With EASERA, you can pick up your laptop and go.

## Minimal Hardware Requirements

While the AUBION X8 is designed for optimum convenience and measurement accuracy when using EASERA software, it is not required. EASERA performs well with most external PC sound cards, acquiring accurate and reliable data without the need for expensive "esoteric" external microphone preamplifiers and AD/DA converters.

## Modular, Extensible Software

EASERA is a modular suite of test & measurement software. Additional capabilities can be added to the basic package at any time they are needed.

## Simple to Learn, Understand & Operate

EASERA runs in the familiar Windows environment, with an intuitive GUI (Graphic User Interface) that shortens the learning curve and makes most measurement operations fast, simple and easy.

## Automated Setup

Proper setup and calibration are critical for any measurement procedure. EASERA's built-in Measurement Wizard handles most setup tasks precisely and automatically. The operator answers a few simple questions and the Measurement Wizard takes care of the "devilish details." Multiple calibration setups can be stored and for instant recall.

## Flexible & Fast

Unlike many measurement systems, EASERA is able to store acoustical data as well as to acquire it. This makes it easy to automate commonly-used measurements. Automated setup, pre-programmed measurements, automated data processing routines – EASERA is loaded with time-saving features. Users have more time to inspect and analyze data, because they spend less time acquiring it.

## Dual-Channel FFT Analysis

EASERA can perform dual-channel FFT analysis, so you can use music or speech program as the test signal. The internal signal generator is also available, along with external stimuli such as gun shots or balloon bursts.

## Accurate Results in Noisy Environments

EASERA collects measurement data with full precision (sampling rates to 48 kHz) and repeatability. Noise compensation and averaging produce accurate results, even in noisy environments.

## Measure Once: Analyze At Will

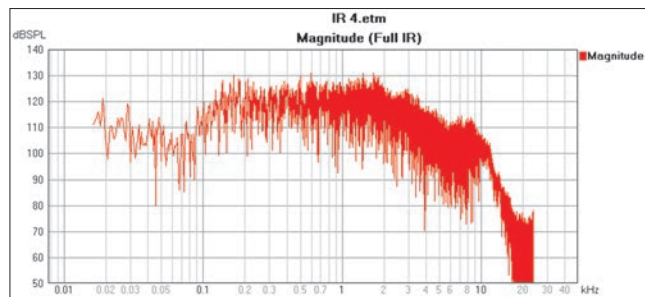
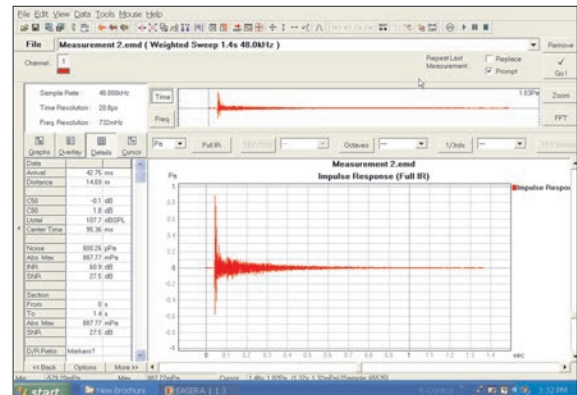
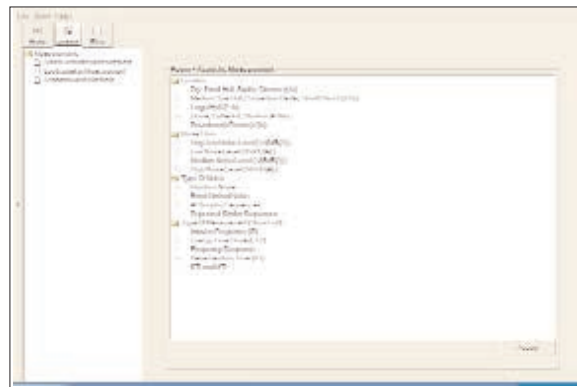
EASERA acquires all room acoustic parameters defined in ISO 3382 at once. Results are stored, enabling instant push-button access and post-processing at any time. Accurate Intelligibility figures (STI & AIcons) can be produced in seconds.

## Echo Speech & Echo Music Displays

EASERA instantly lets you know if reflected sound will be perceived as separate echoes with either of these two common types of program material.

"After beta testing EASERA, we are now using it on a regular basis. Nothing beats this software for providing a wide range of objective measures for performance spaces. It gets all the previous acoustical measurement parameters, and plenty of new ones, into a single package that was designed by acousticians for acousticians."

**Michael Jarzabkowski, Applications Consultant**  
**Dr. Peter D'Antonio, President/CEO**  
**RPG Diffusor Systems, Inc.**





## Faster & More Powerful

EASERA PRO expands on the capabilities of EASERA to acquire and analyze vast amounts of acoustical data in seconds.

## 32 Channel Operation - Sampling Rates from 8 kHz to 192 kHz

To save time in large project commissioning or verification or in R&D facilities, EASERA PRO measures up to 32 microphone locations instantly. When high frequency accuracy is essential, EASERA PRO can extend measurement bandwidth well beyond the upper limits of audibility.

## Built-In MLS Measurements

MLS (Maximum Length Sequence) measurements with Hadamard Transform Correlation are included in EASERA PRO. They can be compared directly with legacy MLSSA data.

## Non-Linear Measurements

With its integral harmonic distortion and other non-linear measurement capabilities, EASERA PRO can quickly identify faulty transducers either in the production facility, the assembly process, or at the job site.

## In Situ Material Absorption Measurements

With EASERA PRO, time-consuming and expensive laboratory measurements are no longer required to analyze the acoustical properties of unknown materials. EASERA PRO can acquire this critical information in the field.

## Continuous Measurements

The continuous measurements feature allows measurements to be immediately displayed in View and Calc screens, permits users to watch the Impulse Response being continuously updated.

## Level Range & Range Exceeding Indications

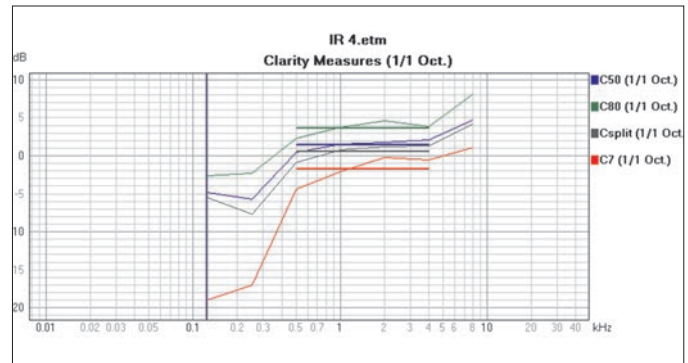
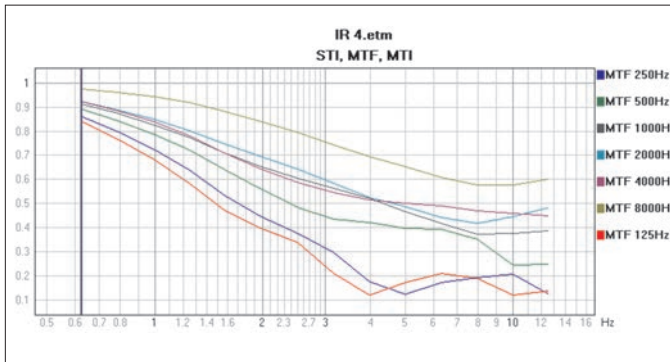
Another EASERA PRO tool instantly identifies out-of-tolerance performance while graphically displaying in-spec performance: ideal for verifying conformance to specifications and for the test bench.

## Expanded Editing & Post Processing Capabilities

EASERA PRO expands on the post-processing power of EASERA to make data analysis even faster, more customizable and more intensive.

## Custom Stimulus Signal Design

Automated equipment test routines and other applications that require custom stimulus signals are easily programmed with EASERA PRO.



# EASERA SYSTEME Live Sound Measurements In Real Time

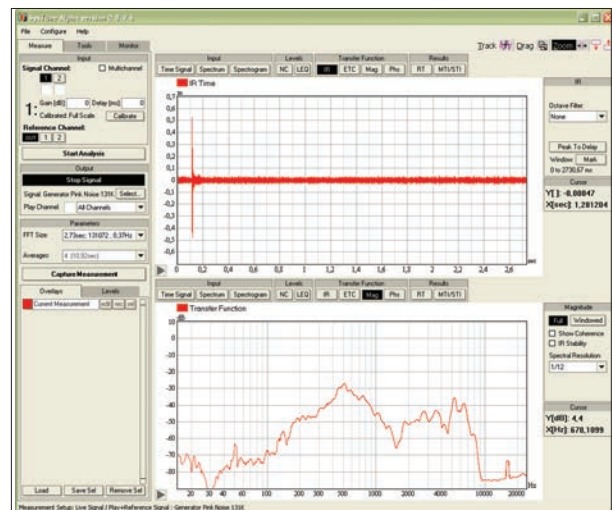
SysTune represents a remarkable - if not incredible - step forward in its ability to take acoustical measurements in real time even when an audience is present!

SysTune acquires Impulse Response data using live program material and simultaneously displays time-domain and frequency-domain measures in real time - and automatically produces accurate, repeatable measurements every time!

SysTune also has the ability to process up to 8 input channels simultaneously and generate spatially averaged spectrum and transfer displays (multi-channel FFT).

SysTune provides live RT and STI calculations instantly.

SysTune does all that and much more - for more details, visit our website [www.renkus-heinz.com](http://www.renkus-heinz.com) or ask for our SysTune brochure.

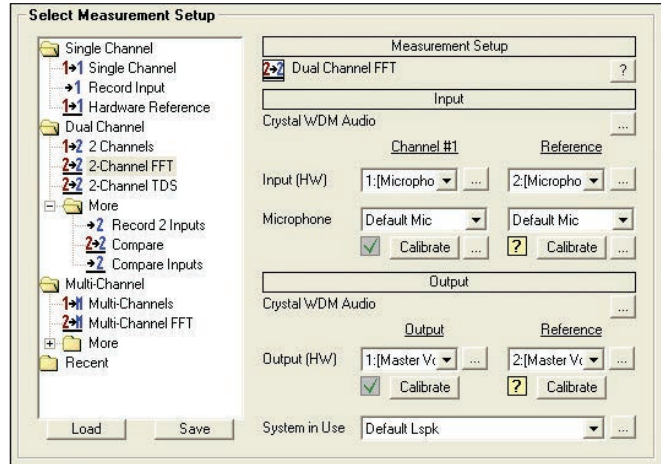




# MODULAR VERSATILITY

“EASERA’s ability to measure simultaneously from multiple positions, without summing, averaging or switching, is an enormous benefit. Not only does it speed up the process, but it creates the opportunity to obtain additional information by comparing several measurement positions in real time on a single screen.”

**Wade McGregor, Principal MC2**



## MLS Module

MLS measuring capabilities are included with EASERA PRO and can be added to EASERA at any time.

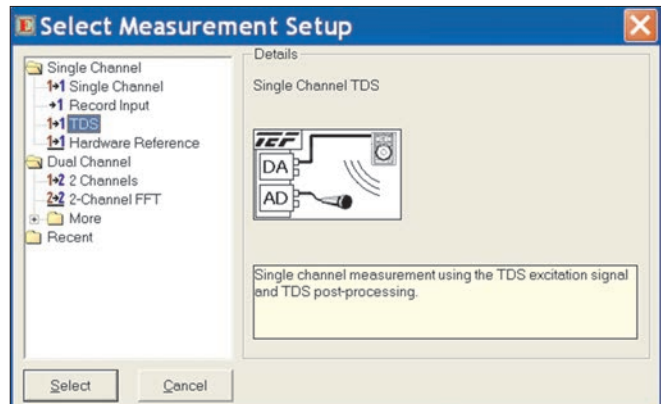
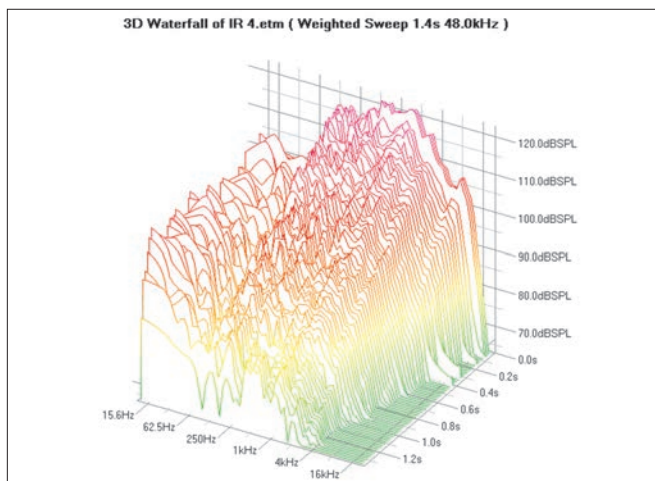
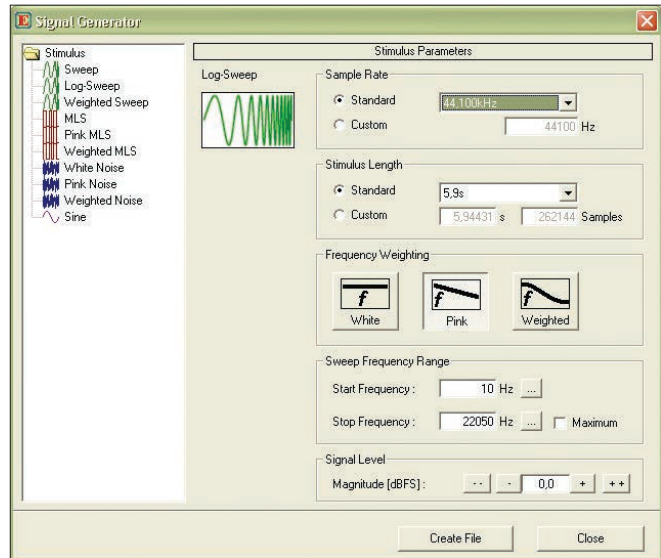
The MLS (Maximum Length Sequence) module includes Hadamard Transform Correlation: this allows direct comparison with legacy MLSSA data. STI (Speech Transmission Index) readings taken using MLS techniques comply with the STI Standard IEC / EN 60268-16.

## TDS Software Module

Time Delay Spectrometry, pioneered by Richard Heyser, allows meaningful data to be gathered in noisy environments – even under extremely noisy conditions such as construction sites – by using a synchronized tracking filter to distinguish the sweep stimulus from random noise. EASERA can apply this TDS tracking filter as a post-process to any data file. It retains the complete impulse response, allowing further evaluation and/or convolution. EASERA’s TDS measurements can be compared directly with old TDS measurements.

## POLAR Module

The POLAR module, an optional EASERA and EASERA PRO module, provides for automated loudspeaker measurements. POLAR will drive turntables manufactured by both Outline and Linear X.



## Measurement Microphone

The TEF04P is a ½" diameter, omni directional, electret condenser microphone. Its omnidirectional design is ideal for acoustical measurements where a free field pickup pattern is needed. Frequency range is 20 Hz to 15 kHz .5 dB

The TEF40P has been designed to operate on phantom voltages from 12 V DC to 48 V DC. Manufactured in the USA, the precision machined stainless steel body provides the exacting dimensions needed by acoustic calibrators.



### Hardware / Software Requirements

**EASERA** and **EASERA PRO** run under Windows 98, Windows 2000, Windows XP, Vista and Windows 7 operating systems on any computer with VGA graphics capability. Windows 95 is not supported: Windows ME (Millennium) is not recommended.

**EASERA** requires a minimum of 40 MB of hard disk space

Minimum requirements are easily met by today's PCs and laptops:

128 MB or more of RAM, 300 MHz or higher clock speed and at least 2 Gigabytes of hard disk space. 500 MHz or higher clock speeds and a minimum of 256 MB RAM are recommended for advanced users.

EASERA requires a sound card with a line input to do basic measurements. For precision measurements an AUBION X8 high performance AD/DA converter/preamp is recommended.

## Ahnert Feistel Media Group:

### ADA (Acoustic Design Ahnert) & SDA (Software Design Ahnert)



The Ahnert Feistel Media Group (AFMG) originated in the late 1980's. Through his work with AKG on the Delta Stereophonic System, Prof. Dr.-Ing. habil. Wolfgang Ahnert realized the importance of accurate acoustical design and analysis software. After scientific studies at Lomonossov University in Moscow, he teamed up with Dr. rer. nat. habil. Rainer Feistel, Professor of Theoretical Physics at Rostock University, to develop a computer program capable of scientifically simulating the Delta Stereophony concept. Dr. Ahnert applied his thorough theoretical training and practical experience in acoustics to design the software concepts. Dr. Feistel contributed both advanced calculation algorithms and user interface programming.

Soon after the Berlin Wall fell in 1989, ADA Acoustic Design Ahnert was founded. The previously-developed software prototype was given a functional interface and a now-familiar name: EASE (Electro-Acoustic Simulator for Engineers) was first introduced to the professional audio industry in 1990 at the 88th AES Convention in Montreux. Shortly thereafter, Renkus-Heinz became the worldwide distributor of the English-language version.

The rapid acceptance of EASE by professional acousticians and sound system designers encouraged the development team to expand the program's functionality and refine its accuracy, leading in 1994 to the last release for MS-DOS – EASE 2.1. Dipl.-Phys. Stefan Feistel joined the development team in 1995 to port EASE to the Windows operating system. EASE 3.0 was released in 1999 as the first version of EASE to run in the more user-friendly Windows environment. The growing availability of both desktop and laptop computing power, along with increased demand for modular extensions to the EASE software suite, led to the decision to form a new company in order to put the software development on a professional basis. SDA Software Design Ahnert GmbH was founded in 1999. Its first goal was the development of a new software-based measurement platform that would unify all existing approaches in a modern format. The result, EASERA, was released in late 2004. Shortly after that the manufacturer-independent line array aiming and modeling program EASE Focus was released, along with other software packages engineered for professionals in the audio industry.

Today's Ahnert Feistel Media Group is composed of both ADA, which has expanded with satellite offices in Cairo, Egypt and Doha, Qatar, and SDA as well as the non-profit ADA - Foundation gGmbH. The mission of the ADA - Foundation is to support research into the science of acoustics by collaborating with leading universities in countries around the world, and by making academic discounts on AFMG-developed software available to students and researchers.

EASE, EASERA and there related programs are an ongoing joint development project of ADA and SDA. EASE has become the de facto industry standard for acoustic design and analysis and EASERA is rapidly establishing itself as the premier measurement system. This is due to a number of factors: a foundation in rigorous academic research, and continual improvements in functionality and user interface that take advantage of exponential growth in computer processing power and speed.

## Renkus-Heinz, Inc.



Renkus-Heinz has been researching the science and technology of sound since April 1, 1979. We are proud partners with the Ahnert / Feistel Media Group in the development and distribution of EASE, EASERA and related software, and as a principal center for training and technical support.

Our involvement with AFMG is part of a relentless focus on accurate and natural reproduction of sound, speech and music that has produced 6 major US patents. Our pursuit of significant, measurable and audible improvements includes classic acoustical physics and advanced digital technologies as well as scientific software.

RHAON (the Renkus-Heinz Audio Operations Network), Iconyx - Digitally Steerable Line Array Systems and RPA - Reference Point Arrays exemplify our total systems approach. By exploding boundaries that separate loudspeakers, audio networking, signal processing, power amplification, cabling and hardware, we empower audio professionals to achieve excellence even in difficult conditions.

Our close working relationships with AFMG and other leading audio professionals worldwide expand our research and development capabilities. With advanced tools and innovative partners, we've solved problems for the most demanding houses of worship, sports centers, transportation terminals, performing arts centers, themed entertainment producers, cruise ships, event production teams, etc. Working together, there's no problem we can't solve.

